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CONTENTS

Weber—Entomology in the Arctic 253

Hagmann *et al.*—Evening flight of a tabanid 257

Chamberlin—A new chelodesmid 258

Current Entomological Literature 260

Indexes and title page to Volume LIX 271

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ENTOMOLOGICAL NEWS

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Opportunities for Entomological Research in the Arctic

By NEAL A. WEBER, Swarthmore College, Swarthmore, Pa.

Cartographers and others refer to that part of the earth lying north of the Arctic Circle as the Arctic. The term, however, is a cartographic rather than a biological term since the boundary of the most frigid section of Alaska, for example, does not coincide with the Circle. The lowest temperatures in Alaska have been recorded in the interior south of the Circle. The northward limit of trees forms a line running irregularly for the most part north of the Circle and it is that treeless area in Alaska extending back from the coast of the Arctic Sea into the Brooks Range to which the present note refers.

On a brief visit to the Alaskan Arctic, for which I thank the Office of Naval Research, the Arctic Research Laboratory, and Doctors Laurence Irving and M. C. Shelesnyak, it was possible to make some general observations which contrasted vividly with a longer tour a few months earlier in Equatorial Africa. While the differences are great, the opportunities are similar. Comparatively little research of an entomological type has been done in either, and surveying the fauna of each has yet to be accomplished.

The Alaskan Arctic was visited at the close of its summer and by this time many of the most conspicuous insects, such as mosquitoes, had largely disappeared. The time was propitious, however, for collecting those stages of insects which remain active up to the onset of snow and cold weather. Warm weather, which might have induced some insects to come out, was at no time experienced and the temperature remained in the 30°'s and low 40°'s (Fahrenheit).

The period was thus particularly appropriate for determining those insects adapted to activity in weather comparatively cold for poikilothermic, or cold-blooded animals. Others which take advantage of brief spells of warm weather to telescope their activity into a few short days or weeks were unavoidably missed as adults. The general nature of the Alaskan Arctic insect fauna, however, could readily be estimated.

The great majority of the visible insects not only at this time but at all seasons undoubtedly belong to the Order Diptera, or flies, which are readily distinguished from other insects by possessing two wings instead of the customary four. Not only are they conspicuous but their rôle is of primary importance. The nuisance value of the mosquitoes, of which a few males still remained, is universally appreciated and the harassment of the mammals by them is more than a nuisance. Flesh flies or blow-flies feed on carrion which decomposes slowly in this cold climate. The botfly (*Oedemagena tarandi* L.) which develops in caribou and during other times of the year may render the skins of little value to the Eskimos was not present on its host at this late date, nor was the larval botfly (*Cephenomyia*) which lives in the caribou nasal passage earlier in the year. Other Diptera constituted the majority of the readily visible adult insects and, as immature stages, were the commonest insects in fresh water. Larval Diptera (Calliphoridae) were present in animal carcasses lying on the exposed tundra though their development must have been slow because of the low temperatures. In some instances they were feeding amid frost crystals. It is probable that an hour or more of calm, sunny weather would warm these carcasses sufficiently to accelerate development even to the adult stage this late in the season. In the Point Barrow construction camp small flies (*Leptocera fontinalis* Fall. and *Copromyza* sp.) lived in the mess hall and were the only "domestic" insects established in this area. The common house flies were not present though permanently heated buildings may sooner or later permit them to become established unless insecticides are regularly used.

At the other end of the insect scale, the primitive Collembola ranked with the Diptera in abundance in the tundra. Their rôle is of considerable importance, though difficult to evaluate readily.

These tiny, wingless insects, which are commonly called "springtails" from their habit of leaping like fleas by means of an abdominal appendage on the under side of the body, are present in vast numbers on and in the tundra. They feed upon dead or decaying organic matter as well as on living algae and fungi and appear to be at the bottom of the animal series of a food chain. Since they are fed upon by larger animals which in turn form the food of still larger animals, they are an important link in transforming the tundra into food for higher forms of life. It is these Collembola and Corrodentia, or bark lice, which are probably responsible for the stories of "snow-fleas" in Greenland and other Arctic areas where they are found actively walking, leaping and burrowing on or in snow. In addition, small species of Diptera and larger Plecoptera, or stoneflies, walk about on the snow.

Next to Diptera and Collembola related arthropods, the Arachnida, or spiders and their allies, appear to be of importance. Though not insects they are commonly considered with them. Spiders are abundant on the tundra where they prey on insects or other small animals. Mites occur with Collembola in great numbers in the tundra and perhaps play a somewhat similar rôle as scavengers. Centipedes (of the related Chilopoda) found at Anaktuvuk Pass in the Brooks Range may be near the northern limit of this class of arthropods.

As pollinators of the numerous flowering plants of the tundra, along with flies, the bumblebees (Hymenoptera), including *Bombus moderatus* Cr., have a certain importance. Other Hymenoptera include a few parasitic forms and a social wasp (*Vespula norvegica albida* Sladen). The northernmost record of ants in the New World is of *Leptothorax acervorum canadensis* Prov. taken by Dr. P. F. Scholander in Latitude 69° 22′ North at Umiat within the Alaskan Arctic region.

As food for fresh-water fishes, second to larvae of Diptera, the larvae of the neuropteroids, Perlidae (Plecoptera) and Trichoptera or Caddis flies, including *Grensia praeterita* (Walker), are important. They were active in streams at a near freezing temperature up to the time of my departure in late August at

Anaktuvuk Pass. Dr. Irving took imagoes of the *Grensia* active on the ice over a month later in Latitude 70° 54′ North. These and dipterous larvae probably remain active as long as there is water and, as the water freezes downward, hibernate in the bottom mud in an immature state.

Coleoptera or beetles are not uncommon and appear to be mostly of the carabid type. A single weevil was seen at the end of summer. Also at this late date the parasitic Siphonaptera or fleas were not abundant on the ground squirrels (*Citellus parryii barrowensis* Merriam), foxes and other mammals though reported by the Eskimos to be more numerous in the Spring as are the parasitic Diptera. Significantly, the Eskimo dogs appear to be free of ticks and fleas. The custom of tethering them separately and the cold climate are not conducive to infestation. Lice (Anoplura—*Antarctophthirus trichechi* Boheman) were taken on the walrus and reported from seals. The Mallophaga, parasites mostly on birds, also appear to be scarce on their hosts at this late time of year. An unusual species (*Trichodectes mephitidis* Osborn) was taken on the Arctic weasel (*Mustela arctica arctica* Merriam). Lepidoptera (butterflies and moths) had nearly all disappeared except for a few densely hairy caterpillars crawling sluggishly on the snowy tundra. Aphids (Homoptera) and true bugs (Hemiptera) were scarce. Other orders of insects occur but had mostly disappeared by late summer in the areas visited.

In summary, those insects of primary importance from the standpoint of numbers and biological rôle appear to be the numerous species of Diptera, conspicuous to everyone, and the lowly Collembola which are seldom seen unless appearing as "snow-fleas" on the snow. Hymenoptera and Lepidoptera have specialized rôles as do insects of a few other orders. Social insects, the most numerous terrestrial animals in the tropics, are almost absent, though a study of the farthest north stragglers might prove of special interest.

In conclusion it may be stated fairly that the opportunities are great for the study of insects in the Alaskan Arctic. The adaptation of insects to the climate and the telescoping of the activity of most forms into a brief period in the summer combined with

a long period of hibernation present many unsolved problems. Since the insect fauna is practically unknown, intensive and extensive collecting will add materially to present knowledge on the distribution of many species. The Arctic Research Laboratory now established at Point Barrow on the coast of the Arctic Sea offers for the first time facilities for investigations on these and other problems.

Evening Flight Habits of a Male Tabanid [1]

By Lyle E. Hagmann, George W. Barber,[2] Eleanor B. Starnes and Ordway Starnes, Department of Entomology, Rutgers University, New Brunswick, N. J.

During the first week of August, 1948, one of the authors observed dead males of *Tabanus giganteus* DeGeer (determined by L. L. Pechuman) along the edge of a country road in Middlebush, New Jersey, in numbers sufficient to indicate that certain of their flights took place above the road in such a way that they were struck and killed by automobiles. Sufficient preliminary observation was made to show that these flights probably occurred in the evening. Therefore, observations were made on about ¼ mile of a gravel road from August 10 to 12. This road was bordered on each side by dense woods, many of the largest trees being from 50 to 60 feet high.

On August 10 the males were seen to hover over the road between 7:20 and 8:10 P.M. (E.D.S. time). Each remained in one position for several minutes but darted off swiftly if disturbed. That the flies were active well into twilight was shown in that very soon after they disappeared on this date bats were observed above the road. On August 11 they were observed hovering between 7:20 and 7:40 P.M. At the latter hour rain began to fall and seemingly prevented their further flight. On

[1] Journal Series Paper of the New Jersey Agricultural Experiment Station, Rutgers University, Department of Entomology.

[2] We regret to report that Dr. Barber died on December 6, following a heart attack. This article was submitted by him to Entomological News on October 11, 1948.

August 12 they were seen to hover from 7:40 to 8:00 P.M. Although they were usually hovering from 2 to 5 feet above the road, some were observed up to 20 feet. Careful watch before and after the stated hours showed that no flies were hovering then.

When hovering they were captured rather easily and on the dates mentioned 34, 24, and 20 respectively were taken and many others were seen.

On the first mentioned date one pair was observed to mate. The male struck the female and connection was made in flight, after which the pair attached to a leaf, one holding firm thereto while the other hung motionless below.

Females of this species were observed feeding on cattle in a pasture several miles distant but no males were seen in the vicinity. The road where males were observed was located between a possible breeding area and a herd of cows. It seemed probable that the males lay in wait for the females which were returning, after a blood meal, to the breeding ground.

The hovering habit appeared to be restricted to the period just before darkness when the temperature was falling, and its purpose may have been to maintain the body temperature of the males sufficiently to enable them to make the rapid flights necessary to overtake the females at this time.

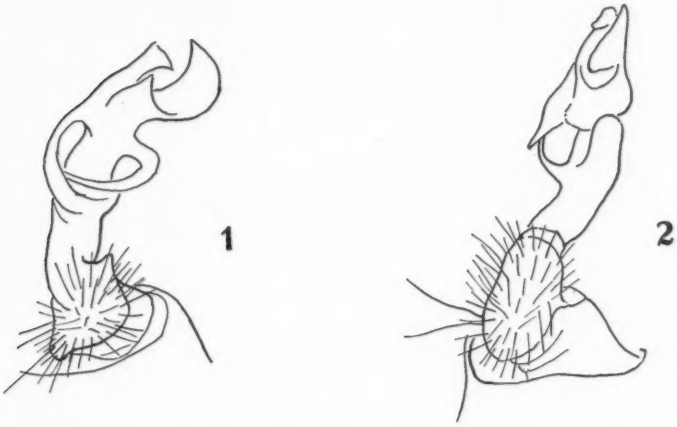
A Third Species in the Chelodesmid Genus Semionellus (Diplopoda)

By RALPH V. CHAMBERLIN, University of Utah

The type of a new species of Semionellus, established by the author for *Leptodesmus placidus* Wood, was noted in the routine examination of a collection of millipeds and chilopods made by Stanley and Dorothea Mulaik near Kerrville, Texas, in 1939 and now in the author's collection at the University of Utah. *Semionellus michiganus* (Chamberlin), described originally under Chonaphe, was previously (1946) found.

Semionellus tertius new species

Chestnut brown above, with the thickened borders of the keels yellow. Legs brownish yellow. Antennae and cauda chestnut brown.



Semionellus tertius n. sp.

FIG. 1. Left gonopod of male, ventral view.
FIG. 2. The same, ectal view.

In the gonopods of the male the characteristic subflagelliform spine of the telepodite is much shorter than in either of the previously known species; also the terminal lobes are obviously different as shown in the accompanying figures.

Width, 4.2 mm.

Locality: TEXAS, near Kerrville (?).

One male taken by S. and D. Mulaik, 1939. A somewhat smaller form than the two species previously known and than the species of Chonaphe, a closely related genus of the Pacific Coast region.

Current Entomological Literature

COMPILED BY RAYMOND Q. BLISS AND R. G. SCHMIEDER.

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

This list gives references of the year 1948 unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For other records of general literature and for economic literature, see the Bibliography of Agriculture, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

NOTE: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of periodicals and serials published in our January and June issues. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

Papers published in ENTOMOLOGICAL NEWS are not listed.

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grain weevils, Calandra granaria (Curclionid). [72] 118: 49–81. **Rings and Weaver**—Effects of benezene hexachloride and DDT upon parasitization of the oriental fruit moth. [37] 41: 566–69. **Scudamore, H. H.**—Factors influencing moulting and the sexual cycles in the crayfish. [12] 95: 229–37. **Scharrer, B.**—The prothoracic glands of Leucophaea maderae (Blattid.). [12] 95: 186–98. **Sherman, M.**—Relative toxicity of the isomers of benzene hexachloride to several insects. [37] 41: 575–83. **Siang-Hsu, W.**—Some observations on the Golgi material in the larval epidermal cells of Drosophial melanogaster. [12] 95: 163–68. **Smith, R. I.**—The role of the sinus glands in retinal pigment migration in grapsoid crabs. [12] 95: 169–85. **Spurway, H.**—Genetics and cytology of Drosophila subobscura. IV. An extreme example of delay in gene action, causing sterility. [Jour. Genetics] 49: 126–40. **Stekler, B. L.**—The use of diethylstilbesterol in the production of eye mutations in Drosophila melanogaster. [12] 95: 258. **Toumanoff, C.**—Le gynandromorphisme et l'action des rayons x sur Carausius morosus. [Trav. Sta. Zool. Wimereux] 13: 665–89, 1938. **Vandel, A.**— La parthénogenese geographique. III. Sur quelques cas de parth. geogr. observés chez les Diptères. [Trav. Sta. Zool. Wimereux] 13: 691–98, 1938. **Viette, P.**—Morphologie des genitalia males des Lepidopteres. [Rev. Franc. D'Ent.] 15: 141–61. **Whiting, A. R.**—Method of origin of androgenetic males in Habrobracon. [12] 95: 259. **Whiting and Blauch**—The genetic block to free oviposition in the chalcidoid wasp Melittobia sp. [12] 95: 243–44. **Williams and Sanborn**—The cytochrome system in relation to diapause and development in the Cecropia silkworm. [12] 95: 282–83. **Wright, M.**—Notes on swarming of certain species of insects (Ephem., Neuropt., Dipt.) [47] 23: 255–58.

ARACHNIDA AND MYRIOPODA—Anastos, G.—Accidental parasitism of a tick by a tick. [73] 55: 36–37. **Baker and Strandtmann**—Myrmonyssus chapmani, a new species of hypoaspid mite (Laelapt.). [46] 34: 386–88. **Bristowe, W. S.**—Spiders of the Arctic island of Jan Mayen. [72] 118: 223–25. **Bryant, E. B.**—Some spiders from Acapulco, Mexico. [73] 55: 55–77 (*). **Crane, J.**—Comparative biology of Salticid spiders at Rancho Grande, Venezuela. Pt. II. Methods of collection, culture, observations and experiments. [95] 33 (3): 139–45. **Ewing, H. E.**—A note on the effect of engorgement on the arrangement of

the dorsal abdominal setae in chiggers (Acarina.). [65] 50: 219–21. **Fuller, H. S.**—Some remarks on the Trombiculinae Ewing, 1929, in Das Tierreich, Trombidiidae, by Sig Thor and Willman (a critical review). [18] 43: 101–11. **Grandjean, F.**—Sur les ecarts dans un clone de Platynothrus peltifer (Acarien). [C. R. Acad. Sci., Paris] 227: 658–61. **Hoff, C. C.**—Hesperochernes thomomysi, a new species of chernetid pseudoscorpion from California. [48] 38: 340–45, ill. **Hoffman, R. L.**—Three new eastern species of millipeds of the family Xystodesmidae. [48] 38: 346–50, ill. **Lawrence, R. F.**—(See under Anatomy.) **Mello-Leitao, C. de**—Aranhas de Carmo do Rio Claro (Minas Gerais) coligidas pelo naturalista José C. M., Carvalho. [16] Zool. N. 80: 1–34, 6 pls., 1947 (*). Algumas arranhas novas de pedra agú e Paraná. [Papeis Avulsos, Dept. Zool., São Paulo] 8: 127–35. **Ravoux, Ph.**—Observations sur l'anamorphose de Scutigerella immaculata. [Arch. Zool. Exp. et Gen.] 85: 189–98. **Schubart, O.**—Os Diplopoda da viagem do naturalista antenor Leitão de Carvalho aos Rios Araguaia e Amazonas em 1939 e 1940. [16] Zool. N. 82: 1–74, 27 pls., 1947 (k*). **Soares, B. A. M. e H. E. M.**—Alótipos e formas novas de opiliões Paranaensis (Gonylept., Phalangi.). [Papéis Avulsos, Dept. Zool., São Paulo.] 8: 63–84. Nova espécie de Ubatubesia e alótipo de Wygodzinskyia viridiornata (Gonylept.). *Ibid.*: 85–88. Opiliões Paranenses da coleção Joram Leprevost (Opiliones-Gonylept.) (*). *Ibid.*: 137–44. Opiliões pertencentes à coleção Gert Hatschaach (Gonylept., Phalangod., Phalangi.) (k*). *Ibid.*: 209–30. Opiliões da coleção Gofferjé (Gonylept.) (*). *Ibid.*: 249–59. **Wharton, G. W.**—Four new Peruvian chiggers (Acarina-Trombicul.). [73] 55: 87–100. The generic name Trombiculoides Jacot, 1938. *Ibid.*: 139–40. The distribution of pest chiggers near Duke University (abstract). [43] 34: 17. **Zilch, A.**—Katalog der Solifugen des Senckenbug Museums. [Senckenbergiana] 27: 119–54.

SMALLER ORDERS—Banks, N.—A new species of Corydalus (Neurop.). [73] 55: 82–83 (S). Notes on Perlidae. *Ibid.*: 113–30 (k*). **Cheo, C. C.**—(See under Anatomy.) **Codreanu, M. et R.**—Deux anomolies des caracteres sexuels chez les Éphémères. [Trav. Sta. Zool. Wimereux] 13: 87–96, 1938. **Deboutteville, C. D.**—Recherches sur les Collemboles termitiphiles et myrmécophiles (Écologie, Éthologie, Systématique). [Arch. Zool. Exp. et Gen.] 85: 261–425. **Denning, D. G.**—Descriptions of eight new

species of Trichoptera. [18] 43: 119–29. New and little known species of nearctic Trichoptera. [73] 55: 16–27. **Emerson, K. C.**—A note on the identity of Colpocephalum ajajae (Mallophaga). [18] 43: 130–31. **Grasse, P.-P. et Ch. Noirot**—La sociotomie, mode de fundation de sociétiés nouvelles chez les termites. [C. R. Acad. Sci., Paris] 227: 781–83. La biologies et les constructions du termite Apicotermes arquieri n. sp. *Ibid.:* 735–36. **Grassé et Noirot**—Termites. (See under Anatomy.) **Guimarães, L. R.**—Duas novas espécies de Polygenis (Pulic., Suctoria). [Papéis Avulsos, Dept. Zool., São Paulo] 8: 189–95. Notas sôbre Microctenia (Menopon. Mallophaga) e descrição de uma nova subespécie. *Ibid.:* 197–202. Pequenas notas sôbre Malofagos. *Ibid.:* 261–63. **Silvestri, F.**—Specie di Japygidae (Diplura) finora raccolti nel Messico. [Boll. Lab. Ent. Agrar. di Portici] 8: 297–320 ill. (*). **Thompson, G. B.**—Records and descriptions of Mallophaga from Jamaican birds. Pt. I. [6] 12 ser. 1: 48–58, ill. **Werneck, F. L.**—"Neohaematopinus longus" n. sp. (Anoplura, Haematopin.). [111] 8: 173–75. **Whitehouse, F. C.**—Catalogue of the Odonata of Canada, Newfoundland and Alaska. [87] 27: 3–53. **Wright, M.**—Ephem. and Neuropt. (See under Anatomy.)

ORTHOPTERA—Bruzzone, R. M.—La formacion de mangas de Shistocerca cancellata. [Inst. Sanid. Veg., Argentina] 4(38): 3–24. **Goustard, M.**—(See under Anatomy.) **Heal and Menusan**—(See under Anatomy.) **Lieberman, J.**—Revision del genero Scotussa, Giglio-Tos, con la descripcion de dos especies nuevas y una sinonimia (Acrid., Cyrtacanthr.). [Inst. Sanid. Veg., Argentina] 3 (33): 3–32, ill., 1947. **Rehn, J. A. G.**—The Acridoid family Eumastacidae (Orth.). A review of our knowledge of its components, featurea and systematics, with a suggested new classification of its major groups. [62] Vol. C, 1948: 77–139. **Ricci, M.**—(See under Anatomy.) **Scharrer, B.**—(See under Anatomy.)

HEMIPTERA—Abbott, C. E.—Cannibalism in Leptocoris trivittatus. [18] 43: 112–13. **Bass, J.**—Die San José Schildlaus. [Natur u. Volk, Ber. Senck. Naturf. Gesell.] 78: 58–65. **Barber, H. G.**—Concerning Esuris Barber (not Stål), and Neosuris Barber, with a new subspecies from Idaho (Lygae.). [73] 55: 84–86. **Buyckx, E. J. E.**—(See under Anatomy.) **Carayon, J.**—(See under Anatomy.) **Carvalho, J. C. M.**—Mirídeos neotropicais, XXVII: Gêneros Porpomiris, Lampethusa, Cyrtopeltis e

Dicyphus. [16] 77: 1–23, ill., 1947 (k*). Mirídeos neotropicais, XXVIII: Gêneros Melanotrichus, Crassicollus N. Gen., Myrmecozelotes e Hyporhinocoris. *Ibid.*: 83: 1–9, ill., 1947 (*). Mirídeos neotropicais, XXXIV: Descrição de uno espécie nova de "Falconia" Distant e algumas correções sinonímicas (Mir.). [111] 8: 18–92. **Drake, C. J.**—A new genus and two new species of Tingidae. [16] 81: 1–4, 1947. **Hungerford, H. B.**—The Corixidae of the Western Hemisphere. [93] 32: 1–827. **Hussey, R. F.**—Esperanza texana in Florida (Corisc.). [18] 43: 115. **Kretzschmar, G. P.**—(See under Anatomy.) **Lent, H.**—O gênero "Rhodnius" Stål, 1859 (Reduvi.) (S*). [111] 8: 297–339. **Monte, O.**—Gêneros e genótipos dos tingídeos do mundo. [Papéis Avulsos, Dept. Zool., São Paulo] 8: 1–22. Notas sinonímicas. *Ibid.*: 231–37. **Sherman, M.**—(See under Anatomy.) **Teale, E. W.**—(See under Hymenoptera.) **Thurman, D. C., J. A. Mulrennan, E. Basham and D. T. Taylor**—Key to Florida Triatoma with additional distribution records for the species (Reduviid). [31] 31: 57–87. **Torres, B. A.**—Sôbre el valor sistemático de las espinas del fémur del primer par de patas enel género Carineta (Cicadid.). [Notas Mus. de la Plata] 13 (102): 73–77, ill. Sobre seis nuevas especies del género Carineta. *Ibid.*: 13 (103): 113–27 (S). **Wygodzinsky, P.**—On some "Reduviidae" belonging to the Naturhistorisches Museum at Vienna. [111] 8: 209–24 (S*).

LEPIDOPTERA—Bauer, D. L.—Methods for collecting buck-moths (Hemileuca, Saturn.). [Lep. News] 2: 81–82. **Brown, W. P.**—"The butterflies north of Mexico." A society project. [Lep. News] 2: 77–78. **Field, W. D.**—The correct name for the N. Amer. butterfly variously called Nymphidia, Calephelis or Lephelisca. [65] 50: 207–13. **Fox, R. M.**—Two new Ithomiinae in the Schaus collection (Nymphal.). [48] 38: 315–16, ill. **Freiberg, A.**—Contribucion al conocimiento de la biologia de Alabama argillacea Inst. Veg. [Inst. Sanid. Veg., Argentina] 1 (9): 3–16, 1945. **Gahan, A. C. de**—Algunos datos biologicos sobre Ecpantheria indecisa (Arctiid.). [Inst. Sanid. Veg., Argentina] 4 (45): 3–16, ill. **Hovanitz, W.**—(See under Anatomy.) **Kretzschmar, G. P.**—(See under Anatomy.) **Matthes, E.**—Amicta febretta, ein Beitrag zur Morphologie und Biologie der Psychiden. [Mem. e Estud. Mus. Zool. Univ. Coimbra] No. 184: 1–80, ill. **Park, O.**—Observations on the migration of monarch butterflies through Evanston, Illinois in September 1948. [Chicago Acad. Sci., Nat. Hist.

Miscell.] No. 30: 1–8. **Pastrana, J. A.**—Una nueva maraposita en las coles de la Republica Argentina (Hellula phidileales). [Inst. Sanid. Veg., Argentina] 2 (16): 3–8, ill., 1946. **Querner, H.**—(See under Anatomy.) **Rings and Weaver**—(See under Anatomy.) **Rogers, W. P.**—Collecting Sphingidae in Jamaica, 1948. [Lep. News] 2: 86. **Sherman, M.**—(See under Anatomy.) **Teale, E. W.**—(See under Hymenoptera.) **Travassos, L.**—Contribuição ao conhecimento dos "Arctiidae." XV. Sôbre do gênero "Bertholdia" Schaus, 1896 (S). [111] 8: 341–60. **Viette, P.**—(See under Anatomy.) **Weidmann, M.**—An interesting abnormality in a polyphemus moth. [Chicago Acad. Sci., Nat. Hist. Miscell.] No. 31: 1–2. **Williams, C. B.**—(See under General.) **Williams and Sanborn**—(See under Anatomy.)

DIPTERA—D'Andretta, M. A. V. e C., Jr.—Redescrição de Gigantodax wrighti (Simuli). [Papéis Avulsos, Dept. Zool., São Paulo] 8: 23–37. Espécies neotropicais da família Simuliidae. *Ibid.*: 145–80 (*). **Bailey, N. S.**—Pupal parasites of Tabanidae. [73] 55: 112. Notes on Tabanus atratus subsp. nantuckensis. *Ibid.*: 131–38. **Barretto, M. P.**—Una nova espécie de flebótomo do vale amazônico e chave para determinação das espécies afins (Psycho.) (k). [Papéis Avulsos, Dept. Zool., São Paulo] 8: 239–47. **Bettini, S.**—(See under Anatomy.) **Bird, M. J.**—(See under Anatomy.) **Bohart, R. M.**—Differentiation of larvae and pupa of Aedes dorsalis and A. squamiger (Culic.) (k). [65] 50: 216–18. **Breland, O. P.**—Notes on the mosquito Uranotaenia syntheta. [52] 8: 108–09. **Carrera, M.**—Asilídeos coligidos no paraguai pela missão científica Brasileira. [Papéis Avulsos, Dept. Zool., São Paulo] 8: 39–48 (*). Sôbre o gênero Leptopteromyia (Asil.). *Ibid.*: 89–96. Novo gênero e nova espécie de Asilidae do nordeste Brasiliero. *Ibid.*: 203–08. Segunda relação de alguns Asilidae e suas presas, com a descrição prévia de novas espécies. *Ibid.*: 265–71. **Collin, J. E.**—On the classification of the genera allied to Musca L. [69] 17: 125–27. **Corradetti, A.**—(See under Anatomy.) **Corrêa, R. R.**—Sôbre alguns anisopódidas da América do Sul descrição de Carreraia n. gen. (Anisopod.). [Papéis Avulsos, Dept. Zool., São Paulo] 8: 97–107 (k). **Dupuis, C.**—(See under Anatomy.) **Garcia, P. C.**—Distribución geográfica y datos bionómicos de A. albimanus uno de los principales vectores de la malaria en Venezuela. [Arch. Venez. Pat. Trop. y Par. Med.] 1: 72–85. **Hardy, D. E.**—Neotropical Dorilaidae (Pipun-

culidae) studies, Part 1. [73] 55: 1–15 (*). **James, M. T.**—Flies of the family Stratiomyidae of the Solomon Islands. [71] 98: 187–213. **Jones, F. M.**—Notes on Melanophora roralis (Dexid.). [73] 55: 31–34. **Joyce, C. R.**—Culex chidesteri at Brownsville, Texas (Culicid). [52] 8: 102–05. **Keister, M. L.**—(See under Anatomy.) **Komp and Bates**—Notes on two mosquito gynandromorphs from Columbia. [65] 50: 204–06. **Lamy, R.**—(See under Anatomy.) **Landrock, K.**—Zweiflügler oder Diptera. VI. Pilzmüken oder Fungivoridae (Mycetophilidae). [Tierwelt Deutschlands] 38 Teil: 1–166, 1940. **Lane, J.** "Mycetophilidae" do Brasil. [111] 8: 247–54 (*). **Pryor, M. G. M.**—(See under Anatomy.) **Rokosky, E. J.**—A bot fly parasitic in box turtles. [Nat. Hist. Misc., Chicago] no. 32: 1–2. **Rozeboom and Komp**—Three new species of culex from Columbia. [46] 34: 396–406 (k). **Sabrosky, C. W.**—A synopsis of the nearctic species of Elachiptera and related genera (Chlorop.). [Wash. Acad. Sci.] 38: 365–82 (k*). **Siang-Hsu, W.**—(See under Anatomy.) **Souza Lopez, H.**—Sarcophagidae do Mexico capturados pelo Prof. Dampf. [49] 45: 555–70, 1947. **Spurway, H.**—(See under Anatomy.) **Stekler, B. L.**—(See under Anatomy.) **Wright, M.**—(See under Anatomy.)

COLEOPTERA—Abeloos, M.—(See under Anatomy.) **Andersen, W. H.**—A note on synonymy in Scolytidae. [65] 50: 215. **Anderson, R. F.**—(See under Anatomy.) **Beier, M.**—(See under Anatomy.) **Blake, D. H.**—Seven new flea beetles from the West Indies (Chrysomel.). [73] 55: 141–49. **Deitrich, H.**—The K. F. Chamberlain collection of Coleoptera. [Coleopt. Bull.] 2: 89. **Fattig, P. W.**—The Chrysomelidae or leaf beetles of Georgia. [Emory Univ. Bull.] No. 6: 1–47. **Guareschi, C.**—(See under Anatomy.) **Hatch, M. H.**—A systematic index to the keys and catalogues of Coleoptera published in l'Abeille, Vol. I, 1864–XXXVI, 1938. [Coleopt. Bull.]2: 81–88. **Kretzschmar, G. P.**—(See under Anatomy.) **Lane, F.**—Sôbre os tipos e a sinonimia de alguns canthonini (Scarab.). II. [Papéis Avulsos, Dept. Zool., São Paulo] 8: 109–21. **Lane, M. C.**—Some generic corrections in the Elateridae. II. [65] 50: 221–23. **Monros, F. y M. J. Viana**—Revision Sistematica de los Hispidae Argentinos (Chrysom.). An. Mus. Argent. Cien. Nat "B. R."] Entomologia No. 162: 125–324, ill. **Park, O.**—Studies on Japanese Pselaphidae. I. Introduction, materials, checklist and key to genera. [Bull. Chicago Acad. Sci.] 8: 203–21. **Pilleri, G.**—Studi morfo-

logici e sistematici sui genere Anisoplia Serv. (Scarab.). [112] 24: 57–72, ill. **Richards, O. W.**—(See under Anatomy). **Sherman, M.**—(See under Anatomy.) **Valentine, J. M.**—New Anophthalmid beetles (Carabidae) from the Appalachian region. [Geol. Survey of Alabama] Mus. Paper 27, Ala Mus. Nat. Hist., pp. 1–19, ill. **Werner and Edwards**—Leptinus americanus taken on a shrew (Leptin.). [73] 55: 51–54. **Wittmer, W.**—Beitrag zur Kenntnis der neotropischen Malacodermata (Drilid, Malachiid). [Rev. Soc. Ent. Argent.] 14: 16–21. Supplement au catalogue de Drilidae. *Ibid.*: 115–16.

HYMENOPTERA—Anderson, E. J.—(See under Anatomy.) **Bailey, N. S.**—(See under Diptera.) **Bequaert, J. C.**—The genus Pachodynerus (Vesp.) in the Antilles. [73] 55: 105–12 (k*). **Blair, K. G.**—The oak gall-flies (Cynipidae) and the law of priority. [28] 84: 235–36. **Burnside and Revell**—(See under Anatomy.) **Buyckx, E. J. F.**—(See under Anatomy.) **Clark and Grosch**—(See under Anatomy.) **Deleurance, E. P.**—(See under Anatomy.) **Donisthorpe, H.**—A redescription of the types of Strumigenys mandibularis and Cephaloxys capitata. [73] 55: 78–81. **Gary and Nelson**—(See under Anatomy.) **Goetsch, W.**—(See under Anatomy.) **Griot, M., H. Gahan, R. Silberman y A. Icart**—Observaciones sobre un parasito secundario del Bicho de cesto (Tetrastichus). [Inst. Sanid. Veg., Argentina] 2 (10): 3–7, ill., 1946. **Grosch, D. S.**—(See under Anatomy.) **Haydak, M. H.**—(See under Anatomy.) **Julliard, C.**—Les nids de l'Anoplius caviventris (Pompil.). [101] 21: 149–58, ill. **Kalmus and Smith**—See under Anatomy.) **Mitchener, A. V.**—The swarming season for honey bees in Manitoba. [37] 41: 646. **Picard, F.**—Sur quelques caractères sexuels secondaires singuliers chez certains Hyménoptères Braconides. [Trav. Sta. Zool. Wimereux] 13: 565–73, ill., 1938. **Ray, D. T.**—(See under Anatomy.) **Rings and Weaver**—(See under Anatomy.) **Simmonds, F. J.**—The biology of parasites of Loxostege sticticalis in N. Amer. IV. Cryptus inoratus (Ichn., Cryptid). [68] 23: 71–79, ill. **Teale, E. W.**—Scourge of the monarch (Achaetoneura archippivora). [Nat. Hist., New York] 47: 356–59, ill. The ant's camels (Membrae.). [56] 57: 456–61. **Whiting, A. R.**—(See under Anatomy.) **Whiting and Blauch**—(See under Anatomy.)

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

Will collect—Zoological and entomological specimens in tropical and subtropical parts of Peru. Jose M. Schunke, Pucallpa, Peru.

Wanted—Diplotaxis; will buy or exchange. E. W. Mange, 307 W. Walnut St., Hanover, Pa.

Hymenoptera-Aculeata (except ants and bees) for exchange. Will collect other orders in exchange. N. F. de Andrade, Casal Novo, S. João do Estoril, Portugal.

Meliponidae—Wanted, information on the bionomics, culture, and economic importance of the stingless bees, particularly of the Old World. P. Nogueira Neto, Av Cicade Jardim 170, S. Paulo, Brasil.

Wasps (Vespoidea, Sphecoidea, Chrysidoidea) of the world by exchange or purchase. Will collect other orders in exchange. D. G. Shappirio, 4811 17th St., N.W., Washington 11, D. C.

Lepidoptera—Large quantities of Plexippus, Colias, Cardui, Vanillae wanted for cash or exchange for tropical butterflies. G. MacBean, 710 Miller Rd., Sea Island, Vancouver, B. C.

Ants of the tribe Dacetini (*Strumigenys, Rhopalothrix* and related genera) wanted for world revision. W. L. Brown, Jr., Harvard University Biological Laboratories, Cambridge 38, Mass.

Mallophaga (on which immediate determination is not necessary) wanted for study and determination. R. L. Edwards, Dept. Biology, Harvard University, Cambridge 38, Mass.

Tingidae (Heteroptera) of the world wanted, in alcohol, with host and other ecological data. Will collect other orders in exchange. N. S. Bailey, 16 Neponset Ave., Hyde Park 36, Mass.

Bombidae, nearctic and neotropical, wanted for exchange, identification, or purchase. Will exchange in other groups for bumblebees. Barth Maina, Dept. Zool., Univ. of Chicago, Chicago 37, Ill.

Saturnidae of the world. Will purchase individual specimens or cocoons. F. E. Rutkowski, St. Bede College, Peru, Illinois, U. S. A.

Butterflies of New England, principally from New Haven, Conn., for exchange. Louis Clarke, 28 W. Elm St., New Haven 15, Conn.

Wanted—Proc. Ent. Soc. Phila., vols. 1–6; Proc. Cal. Acad. (Nat.) Sci., 1–7; Proc. Acad. Nat. Sci. Phila., 1–20; Trans. Amer. Ent. Soc., 1–10; Bull. Buff. Soc. Nat. Sci., 1–5; Psyche, 11, 13, 15; Ent. Amer. n.s., 7–26. C. F. dos Passos, Mendham, N. J.

INDEX TO VOLUME LIX

(* Indicates new genera, names, etc.)

ALEXANDER, C. P. Dr. Alfonso Dampf Tenson (1884–1948) 89
Undescribed species of crane-flies from the western United States and Canada. (Diptera: Tipulidae) Part IX 121
Idem, Part X 207
BARBER, G. W. (See under Hagmann)
BARR, W. F. A new genus and species of Buprestidae from southern California (Coleoptera) 69
BERNER, L. A new species of mayfly from Tennessee ... 117
BICK, G. H. Dragonflies collected from Beaufort County, South Carolina, during the fall of 1945 202
BLISS, R. Q. and R. G. SCHMIEDER. Current entomological literature 216, 245
BLISS, R. Q. and T. M. TELSCH. Current entomological literature 103, 133, 158, 190
(See also under Moul)
BRELAND, O. P. Two migrations of the snout butterfly, Libytheana bachmanii larvata (Strecker) (Lepidoptera: Libytheidae) 128
Notes on some carnivorous mosquito larvae 156
BRELAND, O. P. and L. H. SCHMITT. The biology of two sunflower gall makers (Diptera: Cecidomyiidae; Lepidoptera: Lyonetiidae) 225
BROWN, W. L. Strumigenys karawajewi, new name for a Sumatran ant 44
The status of the genus Hercynia J. Enzmann (Hymenoptera: Formicidae) 102
CHAMBERLIN, R. V. A third species in the chelodesmid genus Semionellus (Diplopoda) 258
Dos PASSOS, C. F. The occurrence of anthoxanthins in the wing pigments of some nearctic Oeneis (Rhopalocera: Satyridae) 92

DREISBACH, R. R. A new species of the genus Tachytes from Michigan (Hymenoptera: Larridae) 151
EADS, R. B. and G. C. MENZIES. Additional records of bat parasites of the family Nycteribiidae 244
EDMUNDS, G. F. The mayfly genus Lachlania in Utah .. 43
The nymph of Epheron album (Ephemeroptera) 12
EMERSON, K. C. A species of Malloghapa from the sanderling 178
EVANS, H. E. Biological notes on two species of Anoplius (Hymenoptera: Pompilidae) 180
FOX, I. New Uropodinid mites associated with rats in Puerto Rico 169
FOX, R. M. Roswellia, a new genus of Ithomines 131
FREEMAN, H. A. Notes on some North American skippers, with the description of a new species from Kansas (Lepidoptera: Hesperiidae) 203
FREEMAN, T. N. The correction of a genotypic citation for the genus Choristoneura Led. 202
HAGMANN, L. E., G. W. BARBER, E. B. STARNES and O. STARNES. Evening flight habits of a male tabanid 257
HULL, F. M. Some neotropical species of syrphids 1
HYLAND, K. New records of Pennsylvania caddis flies (Trichoptera) 38
KNOWLTON, G. F. and S. L. WOOD. Utah Buprestidae .. 41
KNULL, J. N. New species of Agrilus with notes (Buprestidae and Eucnemidae) 72
KROMBEIN, K. The identity of the male Pseudomethoca simillima (Smith). (Hymenoptera: Mutillidae) 187
LA RIVERS, I. A re-definition of the tribe Edrotinae (Coleoptera: Tenebrionidae) 141
Notes on the Eleodini (Coleoptera: Tenebrionidae) ... 96
LIU, C. L. Contributions to the knowledge of Chinese Coccinellidae. IX. On a new Serphid parasite of the larva of Epilachna admirabilis in Kunming 146
MENZIES, G. C. (See under Eads)
MICHENER, C. D. Review: The stingless bees (Meliponidae) of the Western Hemisphere 83

MOUL, E. T. and R. Q. BLISS. Current entomological literature 17, 45, 76
PATE, V. S. L. A new Isodontia from Cuba (Hymenoptera: Sphecidae: Chlorionini) 185
A minute on Chyphotes Blake, 1886 (Hymenoptera: Mutillidae) 41
PHILLIPS, V. T. Review: The Insect Guide 223
REHN, J. A. G. Morgan Hebard (1887–1946) (with portrait) 57
Replacement of two preoccupied names of Tetrigidae (Orthoptera: Acridoidea) 154
REHN, J. W. H. Permanent mounts of dissections to be kept with pinned specimens 242
ROBINSON, M. A new species of Anaides from Peru (Scarabaeidae: Coleoptera) 35
A new species of Aphodius with notes on others (Coleoptera: Scarabaeidae) 113
A new species of Canthon from Venezuela 37
Remarks on a few Scarabaeidae 175
Two new species of neotropical Scarabaeidae (Coleoptera) 149
SABROSKY, C. W. Review: The blowflies of North America 26
SCHMIEDER, R. G. Review: A catalogue of insecticides and fungicides 55
Review: A textbook of agricultural entomology 167
Review: Basic botany 55
Review: Vegetable insects 167
SCHMIDT, E. Calopteryx versus Agrion; again? 197
SCHMITT, L. H. (See under Breland)
SCHWARTZ, H. F. Theodore D. A. Cockerell (with portrait) 85
SHERMAN, F. Coreidae of South Carolina in comparison with North Carolina (Hemiptera) 15
STARNES, E. B. (See under Hagmann)
STARNES, O. (See under Hagmann)
TELSCH, T. M. (See under Bliss)

TOWNES, H. Czechoslovakian insect pins now available.. 75
WEBER, N. A. Observations on the incidence of ticks on Kenya mammals 235
Opportunities for entomological research in the Arctic.. 253
Termite-eating Pheidole larvae (Hymenoptera: Formicidae) 31
WEISS, H. B. Rudolf William Glaser, 1888–1947 29
WILLIAMS, J. L. Notice: Catalogue des Lépidoptères ... 215
WORTH, C. B. The unexplored world (a sonnet) 189
WOOD, S. L. (See under Knowlton)

GENERAL SUBJECTS

Anoplius, biological notes on . 180
Anthoxanthins in wing pigments 92
Ants eat termites 31
Arctic, opportunities for research in 253
Calopteryx versus *Agrion* ... 197
Carnivorous mosquito larvae . 156
Catalogue des Lépidoptères .. 215
Collections: H. H. Smith, Chalcid 17
Evening flight of Tabanus ... 257
Gall makers of sunflower 225
Insect pins, Czechoslovakian . 75
International meetings 44
Migrations of snout butterfly . 128
Permanent mounts of dissections kept with pinned specimens 242
Pigments and systematic position in Rhopalocera 92
Sonnet (Unexplored world) . 189
Sunflower galls 225
Termite-eating *Pheidole* larvae 31
Ticks from Kenya Mammals. 235
Unexplored world (sonnet) .. 189
War losses: Musea de La Salle, Bogotá 103

OBITUARY NOTICES

Cockerell, T. D. A. 85
Cresson, E. T., Jr. 76
Dampf Tenson, A. 89
Glaser, R. W. 29
Hebard, M. 57
Torre-Bueno, J. R. de la .. . 91

PERSONALS

Comstock, J. A. 215
Hodge, C., IV 120
Michener, C. D. 174
Painter, R. H. 215
Robinson, M. 120
Schmieder, R. G. 120

REVIEWS

A textbook of agricultural entomology 167
Basic botany 55
Blowflies of North America .. 26
Chemical insecticides 55
The blowflies of North America 27
The insect guide 223
Vegetable insects 223
Wasmann collector 103

GEOGRAPHICAL DISTRIBUTION

Alaska: Dipt., Hym., Trich., Siphon., Anopl., Malloph. 254–256
Arizona: Dipt. 207–214
Bolivia: Odon. 4
Brasil, Odon. 5, 7, 9, 12
California: Col. 72, 74
Canal Zone: Col. 149
Colorado: Dipt. 123, 125, 127
Costa Rica: Col. 151
Cuba: Odon. 2; Hym. ..186, 187
Haiti: Odon. 10
Kansas: Lep. 205
Kenya: Acarina 235
Michigan: Hym. 153
Montana: Dipt. 127
North Carolina: Hemip. 15
Oklahoma: Lep. 205
Pennsylvania: Trich. 38
Peru: Col. 35
Puerto Rico: Acarina 170, 171, 172, 173
South Carolina: Odon. 202; Hemip. 15
Tennessee: Ephem. 120
Texas: Lep. 203, 205, 206; Diplop. 259
Utah: Col. 41; Ephem. 43
Venezuela: Col. 37
Yukon: Col. 114

COLEOPTERA

admirabilis, Epilachna, parasite 146
aleutus, Aphodius 114
arens, Edrotes 145
bifurcatus, Canthon* 37
Blaptinae 97
Buprestidae of Utah 41
chapini, Anomala* 150
chiriquensis, Phanaeus 175
cochisei, Agrilus* 72
depressus, Onthophagus 177
Edrotini, re-definition 141
Eleodes 98
Eleodimorpha 98
Eleodini, notes 96
Eleodini, key to 98
Embaphion 98
ereptus, Deltometopus 75
granarius, Aphodius 116
haldemani, Aphodius 116
hopfneri, Onthophagus 176
knulli, Trichinorhipis** 71
Lariversius 97
leptotarsis, Aphodius 115
mirabilis, Juniperella 74
oculatus, Pachyschelus 74
ovatulus, Ataenius 177
pilosus, Trichillum* 149
Pimeliopsis 144
purpureus, Pachyschelus 74
rotundus, Edrotes 145
rugosa, Anaides* 35
*Trichinorhipis** 70
Trogloderus 97
uvalde, Pachyschelus 74
ventricosus, Edrotes 144
yukonensis, Aphodius* 113

DIPTERA

antrozoi, Basilia 244
asthenia, Baccha* 4
Baccha 1
biacus, Gonomyia* 209
Calliphoridae in Arctic 254
carmelita, Baccha* 9
Carnivorous mosquito larvae . 156
Copromyza sp. 254
corynorhini, Basilia 244
Diptera in the Arctic 254
estrelita, Baccha* 1
filiformis, Gonomyia* 211
fontinalis, Leptocerca 254
fulvivauda, Prionocera* 121
Galls of *Trishormomyia* 225

giganteus, Tabanus, evening flight 257
harlequina, Baccha* 10
helianthi, Trishormomyia 225
howardii, Psorophora 156
leucopoda, Baccha* 5
mulaiki, Tipula* 123
Nycteribiidae 244
perflavens, Erioptera* 212
plutonia, Baccha* 2
sagittifera, Tipula* 125
semifacta, Limnophila* 207
septentrionalis, Megarhinus .. 156
sperryana, Gonomyia* 209
stolidus, Molophilus* 213
tarandi, Oegemagena 254
vampyra, Baccha* 7

HEMIPTERA

Coreidae 15
Coreidae of North Carolina and South Carolina 15

HYMENOPTERA

acervorum canadensis, Leptothorax 255
Anoplius, biological notes on . 180
brevis, Torymus 230
Chalcidoidea, Smith Collection 17
Chyphotes 41
cyaniceps, Eupelmus 234
geryon, Pseudomethoca 187
Hercynia 102
ithaca, Anoplius* 180
karawajewi, Strumigenys,* new name 44
Leptacis 230
marginatus, Anoplius 183
Microbracon sp. 234
moderatus, Bombus 255
norvegica marginata, Vespula. 255
Pheidole larvae eat termites .. 31
Platygaster sp. 230
poeyi, Isodontia* 185
quadrifasciatus, Tachytes* ... 151
Serphid parasite of *Epilachna* 146
Tetramorium 102
tylodermata, Eurytoma 234
Wasmannia 102

LEPIDOPTERA

acrisione, Athesis 132
Anthoxanthins in wing pigments 92
bachmanii larvata, Libytheana 128
cairnesi, Oeneis 94
Catalogue des Lépidoptères .. 215
chryxus, Oeneis 94
clearista, Athesis 132
diversana, Tortrix 202
eulogius, Atrytone 205
fumiferana, Choristoneura 202
fusicola, Bucculatrix 225
Galls of *Bucculatrix* 225
ivallda, Oeneis 94
metea licinus, Hesperia 203
Migrations of Libytheana ... 128
nahanni, Oeneis 93
Oeneis, Anthoxanthins in wing pigments of 92
percosius, Cobalus 206
Pigments in wings 92
*Roswellia * acrisione* 132
rusticana, Tortrix 202
Skippers, notes on 203
taygete, Oeneis 94
turneri, Atrytonopsis* 205
uhleri, Oeneis 93
undulatus, Urbanus 203
varuna, Oeneis 93

ODONATA

Calopteryx versus Agrion ... 197
Dragonflies from South Carolina 202

ORTHOPTERA

Barytettix 155
Marshallacris, new name 155
Moluccasia, new name 155
Tetrigidae, preoccupied names in 154
Thymoites 155

SMALLER ORDERS

album, Ephoron, nymph (Ephem.) 12
albus, Actornithophilus* (Malloph.) 178
Collembola in the Arctic 254
Corrodentia, Arctic 255
Ephemeroptera, nymph of *Ephoron* 12
Lachlania (Trich.) 43
mephitidis, Trichodectes 256
parryi barrowensis, Citellus (Siphon.) 256
praeterita, Grensia (Trich.) .. 255
spinulosum, Colpocephalum (Malloph.) 178
Termites, eaten by ant larvae 31
trichechi, Anarctophthirus (Anopl.) 256
Trichoptera of Pennsylvania .. 38
tusculanensis, Isonychia* (Ephem.) 117

NON-HEXOPODA

cassida, Uroobovella* (Acar.) 171
Chilopoda, Arctic 255
marmorea, Fuscuropoda* (Acar.) 170
Mites, Arctic 255
ovata, Fuscuropoda* (Acarina) 169
praecutus, Leiodinychus* (Acar.) 171
simplus, Leiodinychus* (Acar.) 172
Spiders, Arctic 255
tertius, Semionellus* (Diplopod) 258
Ticks from Kenya mammals, list of 235

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